



National
Aeronautics and
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Administration

COMPLETED
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AO NO. OSSA-4-83

OCTOBER 1, 1983

ORIGINAL

Announcement of Opportunity

COMET HALLEY INVESTIGATIONS

USING THE

ASTRO - I PAYLOAD ON SPACE SHUTTLE

NOTICE OF INTENT DUE DATE:

NOVEMBER 1, 1983

PROPOSAL DUE DATE:

DECEMBER 15, 1983

ANNOUNCEMENT OF OPPORTUNITY
COMET HALLEY INVESTIGATIONS USING THE
ASTRO - I PAYLOAD ON SPACE SHUTTLE

I. DESCRIPTION OF THE OPPORTUNITY

The National Aeronautics and Space Administration (NASA) announces an opportunity to do research on Comet Halley using Astro-1, an astronomical Shuttle payload now under development. The Astro-1 payload consists of three ultraviolet telescopes, one equipped with an image-intensified film camera, another with a far-ultraviolet spectrograph, and the third with an ultraviolet spectropolarimeter, and two wide-field cameras operating at visible wavelengths. These instruments are to be mounted on an Instrument Pointing System in the Shuttle cargo bay, and co-aligned with sufficient precision to permit simultaneous observations. Marshall Space Flight Center has overall responsibility for the development of the payload.

It is currently expected that Astro-1 will be launched on the Space Shuttle in March 1986. The baseline mission plan is to launch Astro-1 to make observations of Comet Halley near the time of the encounter phases of the Giotto, VEGA and Planet A missions, so that remotely-sensed observations of larger-scale phenomena can be related to localized in situ measurements by the intercept missions.

Astro-1 is the first of three planned flights of the Astro payload, which is being developed for astrophysical observations in the ultraviolet. The basic Astro payload consists only of the three ultraviolet telescopes. Two wide-field cameras are being added to the basic payload specifically to make observations of the comet. The Astro-1 flight will include a significant fraction of time for observations of Comet Halley in addition to its program of astrophysical observations. This announcement is for participation in the Comet Halley portion of the mission only.

Proposals are sought for scientific investigations of Comet Halley using data obtained with one or more of the five instruments on the Astro-1 payload. Proposals for additional instruments or for modifications to the existing instruments will not be considered.

This Announcement of Opportunity is being issued to assure timely selection of cometary investigations to aid in detailed planning of the Astro-1 flight. Astro-1 Comet Investigators selected on the basis of responses to this announcement will be responsible for the definition and planning of individual scientific studies of Comet Halley based on data obtained during the Astro-1 mission. As the time available for observations of Comet Halley is limited, a careful synthesis of the individual observing programs will be required. For this reason, an Astro-1 Halley Science Team (AHST) will be formed consisting of the selected Astro-1 Comet Investigators plus one scientist from each of the three Astro instrument teams. The AHST will be responsible for defining an overall plan for observations of Comet Halley. Two members of the AHST will be selected by the team from among the Astro-1

Comet Investigators to serve as voting members, together with the Astro instrument P.I.'s, on the Astro Investigators Working Group (IWG). The two AHST members will represent imaging and non-imaging Comet Halley science, respectively. The IWG has the responsibility for the definition, planning and implementation of the total mission program of scientific investigations, astrophysical as well as cometary, on the Astro-1 mission.

It is anticipated that the AHST will meet bimonthly, usually at the Marshall Space Flight Center, from February 1984 until July 1984 (3 meetings) to establish an optimum observational timeline by September 1984. Thereafter, the AHST is expected to meet semi-annually until October 1985 and approximately quarterly throughout FY 1986. A high level of activity is expected to occur during and immediately following the mission. Team members should plan to spend time at the Project Operations Control Center (POCC) at the Johnson Space Center during the mission as the team is expected to provide continuous, 24 hour representation at the POCC during that time. As the Astro-1 Comet Investigators will have to work closely with the one or more of the instrument P.I.'s to obtain their data, each team member will be expected to spend time at the appropriate instrument P.I.'s institution(s) to participate in reduction and preliminary analysis of the cometary data. Priority must be given to timely reduction and publication of results. Policies regarding authorship on Comet Halley publications are to be worked out before launch by the AHST in collaboration with the instrument P.I.'s. All science data from the flight must be submitted to the NSSDC one year after receipt of calibrated data.

At the present time, NASA plans to archive all Astro data at the National Space Science Data Center (NSSDC) located in Greenbelt, Maryland. The Astro-1 data collection will be made available to the general public, through the NSSDC, approximately one year after receipt of reduced data by the AHST. The cometary-related data from the Astro-1 flight will also be archived by the International Halley Watch (IHW). Readers of this Announcement should realize that they do not need to propose an Astro-1 comet science investigation to gain access to Astro-1 Comet Halley data after expiration of the normal proprietary period.

II. ANNOUNCEMENT OBJECTIVES

To be selected, proposals submitted in response to this Announcement must address one or more of the following experimental objectives:

- o To ascertain the composition and physical properties of gas and dust in the atmosphere of Comet Halley, in order to improve our understanding of the basic composition, physical state, and origin of the comet's nucleus, and the relationship of cometary material to material elsewhere in the solar system.
- o To determine the nature of the Sun-comet interactions as a means of understanding how the comet has evolved and how its properties are coupled with conditions in the solar wind.
- o To enhance the scientific value of measurements of Halley made by cometary probes and from the ground.

III. BACKGROUND

A. Mission Context

Physical study of comets is a major objective in NASA's program of solar system exploration. The 1985-1986 apparition of Comet Halley will afford the possibility of studying a bright, active comet throughout a substantial fraction of its orbit. This apparition, which will not be repeated for more than 75 years, provides a unique opportunity to increase our understanding of cometary physics.

Programs employing a variety of approaches to study of Comet Halley are already underway. Several non-U.S. missions to the comet are being planned. In all cases, the spacecraft are targeted to pass on the sunward side of the comet nucleus in March 1986, near the time of the post-perihelion passage of the comet through the plane of the ecliptic: 1) the European Space Agency's Giotto spacecraft is scheduled to pass 10^3 kilometers upstream of the nucleus of Comet Halley on March 13, 1986; 2) the Soviet Union's two VEGA spacecraft are scheduled to pass 10^4 kilometers ahead of Halley's nucleus on March 6 and 9, 1986, respectively, after a flyby of Venus; and 3) the Japanese spacecraft Planet A is scheduled to pass 10^5 kilometers upstream of Halley's nucleus on March 8, 1986.

In addition, some observations of Comet Halley may be made with existing U.S. spacecraft. One, ISEE-3, is presently scheduled to monitor the solar wind some 30 million kilometers upstream of Comet Halley's nucleus on March 30, 1986, if it survives its planned passage through the tail of Comet Giacobini-Zinner on September 11, 1985. Observations of the comet also may be attempted with the ultraviolet spectrometer aboard Pioneer Venus Orbiter.

An extensive program of ground-based observations is also planned. The International Halley Watch (IHW) has been established to advocate, standardize, and coordinate ground-based observations of the comet, and then to archive data returned by the ground-based observer networks and by spacecraft. Under the IHW, several international networks of ground-based astronomers have been established to observe Halley by a variety of techniques. A description of the activities of the IHW will be sent to individuals submitting a Letter of Intent as specified in Section VI.

B. Astro-1 Baseline Mission Plan

The current plan is to fly Astro-1 in early March 1986, in a 28.5 degree orbit at 300 to 350 kilometers altitude. Flight duration is planned to be 7 to 9 days, part of which may be used to deploy a commercial satellite.

It must be realized that Comet Halley will not be visible throughout most of the dark side period of the orbit. Observations can only be made on that portion of the orbit just prior to sunrise. With the Astro optical axis pointed towards the comet, the earth's limb will be about 45 degrees

off-axis as the Shuttle enters the sunlit portion of its orbit. For a seven day mission launched on March 6, 1986, the intervals during which such observations of the comet can be made will increase from about 6.5 minutes per orbit on the first day of the mission to about 9.1 minutes per orbit on the sixth day. In this case, the Moon-earth-comet angle will be 12° on March 6 and will decrease to about 6° on March 7. However, active comet observations would not be planned until March 8, when the angle will have increased again to about 13° . The Moon will continue to move rapidly out of the field, to about 44° on March 10 and 75° on March 12.

A detailed observational timeline, including specification of the actual launch date, will be planned by the AHST based on the data requirements of the individual scientific investigations and the total time available for data acquisition. It should be recognized that the timeline developed by the AHST will have to be integrated into an overall timeline developed by the IWG for the total mission.

C. Astro Instrument Performance

A brief summary of the Astro instrument characteristics follows. Detailed performance specifications will be sent to those submitting the Letter of Intent. The instruments are:

- (1) Hopkins Ultraviolet Telescope (HUT), a 0.9m f/2 Cassegrain telescope feeding a prime-focus ultraviolet spectrometer covering the wavelength range 850 to 1850 Angstroms with resolution of 3 Angstroms in the first order. In second order, the instrument is sensitive to the wavelength range 425 to 925 Angstroms.
Principal Investigator: Dr. A. F. Davidson, Johns Hopkins University
- (2) Ultraviolet Imaging Telescope (UIT), a 38-cm f/9 Ritchey-Cretien telescope used as a camera for imaging in broad ultraviolet bands in the wavelength range 1250 to 2800 Å with 1.8 arc-second resolution over a 40 arc-minute field;
Principal Investigator: Dr. T. P. Stecher, Goddard Space Flight Center
- (3) Wisconsin Ultraviolet Photopolarimeter Experiment (WUPPE), a 50-cm f/10 Cassagrain telescope feeding an ultraviolet spectropolarimeter covering the range 1400 to 3200 Angstroms.
Principal Investigator: Dr. A. D. Code, University of Wisconsin
- (4) Two 35mm wide-field cameras with fixed filters to image the dust tail (5000 to 6500 Angstrom spectral region) and the plasma tail (principally O⁺ in the 3800 to 5000 Angstrom region). The film supply will be adequate to acquire a total of 800 to 1600 frames.
NASA Furnished Instrument

IV. PROPOSAL OPPORTUNITY PERIOD

All proposals submitted in response to this Announcement are due at NASA Headquarters by the close of business (4:30 PM EDT) on December 15, 1983. NASA reserves the right to consider proposals received after this deadline if such an action is judged to be in the interest of the U.S. Government. A complete proposal schedule is given in Section VIII.

V. REQUIREMENTS AND CONSTRAINTS

Each submission must propose a clearly defined scientific investigation to be performed by a single investigator which can be achieved with one or more of the Astro-1 instruments. Ancillary investigations will not be supported under this AO. Support for such investigations may be proposed through the usual SR&T programs. No modifications of the Astro instruments will be permitted.

AHST science activities are scheduled to begin in 1984, with the planning meetings described in Section I, and to continue through 1985 and 1986. A total of approximately \$1.0 million is planned for support of Astro-1 Comet Halley investigators during this three year period. However, these funds are not yet authorized and consequently this Announcement does not constitute an obligation on the part of the U.S. Government to provide such funds.

Data analysis funding will start in FY 1986. Activities in FY 1984 and 1985 will be related principally to planning the investigations, attending AHST meetings to develop investigation timelines, and developing analysis techniques. Cost and work plans submitted by the proposer should reflect the transition from preparatory activities in FY 1984 and 1985 to data taking and analysis in FY 1986.

VI. PROPOSAL SUBMISSION INSTRUCTIONS

A. Letter of Intent to Propose

The Program Scientist for the Astro missions at NASA Headquarters is Dr. Edward J. Weiler. The Deputy Program Scientist for the Comet Halley portion of the Astro-1 mission is Dr. William E. Brunk. Those who are interested in proposing Comet Halley investigations as part of the Astro-1 mission should send a Letter of Intent, notifying NASA of their intent to propose, to:

Dr. William E. Brunk
Code EL-4 (Ref. AO-OSSA-4-83)
National Aeronautics and Space Administration
Washington, D.C. 20546

If the proposer is from any country other than the United States, the Letter of Intent should be sent to the above addressee, with an additional copy to:

Ms. Lynn Cline
Astro-1 (ref. AO-OSSA-4-83)
International Affairs Division (Code LID-18)
National Aeronautics and Space Administration
Washington, D.C. 20546
U.S.A.

TELEX No. 89530

Letters of Intent should include the following information:

- o Name, address, and telephone number of the principal investigator;
- o Name and address of sponsoring organization; and
- o Specific objectives of the intended investigation.

Letters of Intent should be received at NASA Headquarters on or before November 1, 1983. Material in these letters is for information only, and is not binding on the signatories. Additional information can be obtained from Dr. William E. Brunk, at the above address or at telephone number (202) 755-3260. All individuals who submit a Letter of Intent will receive a copy of a description of the Astro instrument performance specifications, a copy of the "Report of the Science Working Group for Spacelab Observations of Comet Halley," as well as the report on the International Halley Watch.

B. Proposal Preparation Procedures

A uniform proposal format will be required, to aid in proposal evaluation and to facilitate comparative analyses. Detailed instructions concerning the scope and organization of Astro-1 cometary science proposals are presented in Appendix B of this Announcement. All proposals should contain a technical plan, describing the technical aspects of the investigation, and a management/cost plan, describing how the project will be implemented. Proposal technical plans will be restricted in length to 15 pages of text, or less. All proposals must be typewritten and submitted in English. Foreign proposals must be accompanied by a letter of endorsement from a foreign sponsoring agency (see Appendix A).

All proposals are to be for single investigations to be undertaken by single investigators. Those individuals will be designated as Principal Investigators responsible for the investigation and will serve on the Astro Halley Science Team. Proposals should provide information on the experience and capabilities of the proposer with respect to cometary investigations. General Instructions and Provisions for Proposals are given in Appendix B.

C. Proposal Submission

Twenty-five copies of each proposal should be submitted to NASA. Twenty of these copies should include the management/cost plan and the remaining five should consist of the technical plan alone. At least one complete copy of the proposal must be signed by an institutional official authorized to certify institutional support, sponsorship of the investigation, and the management and financial aspects of the proposed project. Proposals originating from within the United States should be sent to:

National Aeronautics and Space Administration
Office of Space Science and Applications
Attn: Code EPM-20 (AO No. OSSA-4-83)
Washington, D.C. 20546

Foreign proposals should be mailed to:

National Aeronautics and Space Administration
International Affairs Division
Attn: Code LID-18 (AO No. OSSA-4-83)
Washington, D.C. 20546

VII. PROPOSAL EVALUATION, SELECTION, AND IMPLEMENTATION

A. Evaluation and Selection Procedure

Proposals received in response to this AO will be evaluated in accordance with the provisions of NASA NHB 8030.6A - Guidelines for Acquisition of Investigations. Accordingly, such proposals will be reviewed by a competent group of outside evaluators. The purpose of the review is to assess the scientific and technical merit of the proposals in the context of this AO. The proposals will be further reviewed by the Astro Project Office at MSFC to determine their technical feasibility and overall compatibility with the Astro mission plan. The results of these scientific, technical, and programmatic reviews will be used by an ad hoc subcommittee of the Space Science and Applications Steering Committee to categorize the proposals.

The NASA Associate Administrator for Space Science and Applications will make selections on the basis of these reviews and the recommendations of the Space Science and Applications Steering Committee. Selection of investigations will involve consideration of the relevance to ongoing NASA programs, overall balance between investigations addressing different scientific questions, and the availability of funds and other mission-related resources. Investigations will be tentatively selected with final confirmation of selection following development of a mission timeline which indicates whether an investigation can be accommodated.

B. Evaluation Criteria

The fundamental goal of the investigation acquisition process is to identify unique ideas and capabilities which best suit the overall scientific and technological objectives of NASA. The following criteria, listed in descending order of importance, will be used in evaluating individual proposals.

- (1) The scientific merit of the investigation and the probability of achieving positive results.
- (2) The relevance of the proposed investigation to the specific opportunity and to the established experiment objectives cited above (Section II).

- (3) The competence and relevant experience of the investigator as an indication of his ability to carry the investigation to a successful conclusion.
- (4) The impact of the investigation on the overall mission profile and/or mission cost.
- (5) The reputation and interest of the investigator's institution, as measured by the willingness of the institution to provide the necessary support to insure that the investigation can be completed satisfactorily.

In addition to the criteria listed above, cost and management factors will be considered separately in all selections. Management aspects include the time and attention the principal investigator intends to devote personally to the investigation. NASA may desire to select only a portion of a proposer's investigation, in which case the investigator will be given the opportunity to accept or decline such partial acceptance.

C. Implementation

Individuals who respond to this announcement will be notified of the outcome of the proposal selection process by NASA Headquarters. It is currently expected that official notification of acceptance or rejection will be issued by approximately February 1984.

VIII. SCHEDULE

Letter of Intent Due	November 1, 1983
Proposals Due	December 15, 1983
Announcement of Selection	February 1984

Proposals for participation must be received by close of business (4:30 p.m., EDT) on the dates specified above.

The cometary science portion of the Astro-1 mission will be one of NASA's major contributions to scientific study of Comet Halley during the comet's apparition in 1986. Observations conducted during this mission could radically improve our understanding of the composition of comets and the physical processes responsible for their interactions with the solar wind and the solar magnetic field. I invite you to participate in this exciting opportunity.

B. Edelson
B. I. Edelson
Associate Administrator for
Space Science and Applications

APPENDIX A.

GENERAL INSTRUCTIONS AND PROVISIONS

I. INSTRUMENTATION AND/OR GROUND EQUIPMENT

NASA will provide the instrumentation and ground support equipment required for any selected investigation. Proposed modifications to the furnished instrumentation will not be accepted.

II. TENTATIVE SELECTIONS, PHASED DEVELOPMENT, PARTIAL SELECTIONS AND PARTICIPATION WITH OTHERS

By submitting a proposal, the investigator and institution agree that NASA has the option to make a tentative selection, pending a successful feasibility or definition study of the proposed investigation.

Furthermore, NASA has the option to contract in phases for implementation of a proposed investigation, and to discontinue the development of an investigative effort at the completion of any phase. The investigator should also understand that NASA may desire to select only a portion of the proposed investigation and/or that NASA may desire the individual's participation with other investigators in a joint investigation, in which case the investigator will be given the opportunity to accept or decline such partial acceptance or participation with other investigators prior to a NASA selection. Where participation with other investigators is agreed to, a single individual normally will be designated as the leader or contact point.

III. FOREIGN PROPOSALS

Proposals for participation by individuals outside the U.S. should be submitted in the same format (excluding cost plans) as U.S. proposals. They should be typewritten and in English.

Foreign proposers must have their proposals reviewed and endorsed by an appropriate foreign governmental agency. Endorsed proposals should be forwarded to NASA to arrive before the deadline indicated under Section IV of the announcement. A "Letter of Intent" to propose should be sent directly to the office designated in the Announcement with a copy sent to NASA's International Affairs Division. All other correspondence (including proposals and endorsements from foreign proposers and organizations) should be sent to:

National Aeronautics and Space Administration
International Affairs Division
Code LID-18 (A.O. No. OSSA-4-83)
Washington, DC 20546
U.S.A.

Foreign proposals will be subjected to the same evaluation and selection processes applied to proposals originating within the U.S. If a foreign

proposal is selected, NASA will arrange with the sponsoring foreign agency for the proposed participation on a no-exchange-of-funds basis, in which NASA and the sponsoring agency will each bear the cost of discharging its respective responsibilities.

IV. TREATMENT OF PROPOSAL DATA

The following policies will be followed in the treatment of proposal data received in response to this announcement.

A. Commercial and Financial Data

- (1) It is NASA's policy to use commercial and financial data included in proposals for evaluation purposes only. This policy does not require that this kind of proposal bear the "Notice" described below.
- (2) Where it is the practice of an offeror or a proposed subcontractor to treat certain commercial and financial data as trade secrets, and such data are protectable as trade secrets under law, he may apply the "Notice" of paragraph (B) below to those portions to be maintained as trade secrets.
- (3) In any event, commercial and financial data submitted to NASA in a proposal will be protected to the extent permitted under the law, either as properly noticed trade secrets, or as commercial or financial information received from a person and considered confidential or privileged.

B. Technical Data

It is NASA's policy to use the technical data contained in any proposal submitted in response to this Announcement for evaluation purposes only. Where any such technical data constitutes a trade secret under the law, and the offeror, or a potential subcontractor, desires to maintain trade secret rights in such technical data, the following "Notice" must be affixed to the cover sheet of the proposal specifying the pages of the proposal which contain trade secrets to be restricted in accordance with the conditions of the "Notice." It is NASA policy to protect technical data labelled in this fashion as a trade secret. NASA assumes no liability for use or disclosure of any proposal technical data to which the "Notice" has not been applied.

NOTICE

"Technical data contained in page(s) . . . of this proposal constitute a trade secret. It is furnished to the Government in confidence with the understanding that it will not, without permission of the offeror, be used or disclosed except for evaluation purposes. In the event a contract is awarded on this proposal, the Government may obtain in the contract additional rights to use or disclose these data."

V. STATUS OF COST PROPOSALS (U.S. PROPOSALS ONLY)

The investigator's institution agrees that the cost proposal submitted in response to this AO is for proposal evaluation and selection purposes only, and that, following selection and during negotiations leading to a definitive contract, the institution will be required to resubmit or execute a Department of Defense Form 633 (Contract Pricing Proposal), as well as submitting all certifications and representations required by law and regulation.

VI. LATE PROPOSALS

The Government reserves the right to consider late proposals or modifications thereof received after the indicated date, but before any selection is made, if such action should be in the interest of the Government.

VII. SOURCE OF SPACE TRANSPORTATION SYSTEM INVESTIGATIONS

Investigators are advised that candidate investigations for Space Transportation System (STS) missions can come from many sources. These sources include those selected through the Announcement of Opportunity, those generated by NASA in-house research and development and those derived from contracts and other agreements between NASA and external entities.

VIII. DISCLOSURE OF PROPOSALS OUTSIDE THE U.S. GOVERNMENT

NASA may wish to obtain assistance outside the U.S. Government in evaluating the technical or scientific aspects of individual proposals. Special arrangements will be established for the appropriate handling of proposal information by outside reviewers. If the investigator or institution wish to preclude NASA from employing outside reviewers, the investigator or institution should indicate this in a covering letter accompanying the proposal. By submitting a proposal without such a letter, the investigator and institution implicitly agree that NASA may have the proposal reviewed by outside specialists. If a proposer objects to the use of outside experts for proposal evaluation, NASA may be unable to consider the proposed investigation.

IX. EQUAL OPPORTUNITY (U.S. PROPOSALS ONLY)

By submitting a proposal, the investigator and institution agree to accept the following clause in any resulting contract:

EQUAL OPPORTUNITY (JUNE 1973)

During the performance of this contract, the Contractor agrees as follows:

(1) The Contractor will not discriminate against any employee or applicant for employment because of race, color, religion, sex, or national origin. The Contractor will take affirmative action to ensure that applicants are employed, and that employees are treated during employment without regard to their race, color, religion, sex, or national origin. Such action shall include but not be limited to the following: Employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoffs or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The Contractor agrees to post in conspicuous places, available to employees or applicants for employment, notices to be provided by the Contracting Officer setting forth the provisions of this nondiscrimination clause.

(2) The Contractor will, in all solicitations or advertisements for employees placed by or on behalf of the Contractor, state that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex, or national origin.

(3) The Contractor will send to each labor union or representative of workers with which he has a collective bargaining agreement or other contract or understanding, a notice to be provided by the Agency Contracting Officer, advising the labor union or workers' representative of the Contractor's commitments under this nondiscrimination clause and shall post copies of the notice in conspicuous places available to employees and applicants for employment.

(4) The Contractor will comply with all provisions of Executive Order 11246 of September 24, 1965, as amended by Executive Order 11375 of October 13, 1967, and of the rules, regulations, and relevant orders of the Secretary of Labor.

(5) The Contractor will furnish all information and reports required by Executive Order 11246 of September 24, 1965, as amended by Executive Order 11375 of October 13, 1967, and by the rules, regulations, and orders of the Secretary of Labor or pursuant thereto, and will permit access to the contractor's books, records, and accounts by the contracting agency and the Secretary of Labor for purposes of investigation to ascertain compliance with such rules, regulations, and orders.

(6) In the event of the Contractor's noncompliance with the Equal Opportunity clause of this contract or with any of the said rules, regulations, or orders, this contract may be cancelled, terminated, or suspended, in whole or in part, and the Contractor may be declared ineligible for further Government contracts in accordance with procedures authorized in Executive Order 11246 of September 24, 1965, as amended by Executive Order 11375 of October 13, 1967, and such other sanctions may be imposed and remedies invoked as provided in Executive Order 11246 of

September 24, 1965, as amended by Executive Order 11375 of October 13, 1967, or by rule, regulation, or order of the Secretary of Labor, or as otherwise provided by law.

(7) The Contractor will include the provisions of Paragraph (1) through (7) in every subcontract or purchase order unless exempted by rules, regulations, or orders of the Secretary of Labor issued pursuant to Section 204 of Executive Order 11246 of September 24, 1965, as amended by Executive Order 11375 of October 13, 1967, so that such provisions will be binding upon each subcontractor or vendor. The Contractor will take such action with respect to any subcontract or purchase order as the contracting agency may direct as a means of enforcing such provisions including sanctions for non-compliance: provided, however, that in the event the Contractor becomes involved in, or is threatened with, litigation with a subcontractor or vendor as a result of such direction by the contracting Agency, the Contractor may request the United States to enter into such litigation to protect the interests of the United States.

X. INVENTION AND DATA RIGHTS

The following provisions concerning invention and data rights will be applicable to any contract resulting from a selection under this Announcement:

(1) In instances where NASA totally or partially funds (cost shares) an investigation under a NASA contract, NASA is required by law to take title to inventions which may result from the work performed under the contract. The contractor would be granted a royalty-free license to practice the invention. The contractor, however, could petition for waiver of such title in accordance with NASA Patent Waiver Regulations 14 C.F.R. 1245.1, whereupon the Agency would give favorable consideration towards waiving title to the invention to the contractor subject to the reservation by the Government of a royalty-free license. As a general rule, the contract provides that NASA and the contractor can use and disclose, without restrictions, the data generated under the contract.

(2) In instances where a joint project is undertaken, i.e., the investigator furnishes the investigation without charge to NASA and no transfer of funds takes place, NASA will obtain a royalty-free license to practice for U.S. Governmental purposes any inventions resulting from the investigation, together with the right to use and disclose the resulting data for U.S. Governmental purposes.

APPENDIX B.

GUIDELINES FOR PROPOSAL PREPARATION

The following guidelines apply to the preparation of proposals in response to this Announcement. The proposal format outlined below is merely a guide for the prospective proposer. Strict adherence to these guidelines is not absolutely necessary. However, proposals should provide information related to all items described below and as otherwise specified in this Announcement.

1. COVER LETTER

A letter or cover page should be forwarded with the proposal. It should be signed by the investigator and an official by title of the investigator's organization who is authorized to commit the organization to the contents and the implementation of the proposal.

2. TABLE OF CONTENTS

The proposal should contain a table of contents.

3. IDENTIFYING INFORMATION

The proposal should contain a short descriptive title for the investigation, the name of the organization or institution, and the full name, address with zip code, and telephone number of the principal investigator.

SECTION 1 — INVESTIGATION AND TECHNICAL PLAN

1. INVESTIGATION AND TECHNICAL PLAN

The investigation and technical plan generally will contain the following:

- a. Summary. A simple, concise statement about the investigation, its conduct, and the anticipated results.
- b. Objectives. A brief definition of the technical objectives, their value, and their relationship to past research efforts and the current state-of-the-art. The scientific rationale for the proposed investigation should be clearly established through references to existing scientific literature and other publications. The proposed investigation should be defined in relation to the current state-of-the-art in cometary research. Proposers are encouraged to define explicit hypotheses that will be tested and/or evaluated by the proposed project.

c. Investigation Approach

- (1) Fully describe the concept of the investigation.
- (2) Detail the method and procedures for carrying out the investigation, including data analysis and interpretation.
- (3) Fully describe any requirements on ground or flight operations such as unusual ground support requirements prior, during, or after the flight or orbiter maneuvering requirements needed for specific observations of the comet.

d. Anticipated Results. To the extent that it is feasible, the expected outcome of the proposed project should be presented. The significance of these results should be discussed, if possible, in terms of their scientific significance and implications for future research and development.

2. DATA REDUCTION AND ANALYSIS

A discussion of the data reduction and analysis plan including the method and format. A section of the plan should include a schedule for the submission of reduced data to the receiving point. In the case of Space Science programs, the National Space Science Data Center (Greenbelt, Maryland) will be the repository for such data.

3. ORBITER CREW AND/OR PAYLOAD SPECIALIST TRAINING REQUIREMENT

A description of the tasks required of each crew member (Commander, Pilot, Mission Specialist) or Payload Specialist should be provided, including the task duration and equipment involved. Indicate special training necessary to provide the crew members or Payload Specialist(s) with the capability for performing the aforementioned tasks.

The technical plan should not exceed 15 pages of printed text, excluding illustrations, tables, references, bibliographies, and biographical information. Proposals which exceed this restriction in length will be returned to their authors in the interest of fairness to all proposers. Proposers who wish to provide evidence of their experience and knowledgability in particular disciplinary fields are encouraged to cite relevant publications they have authored in the general scientific literature. Proposers should not include copies of scientific publications as appendices or addenda to their proposals. Publications of this nature will be returned if they accompany a submitted proposal.

SECTION II -- MANAGEMENT PLAN AND COST PLAN

A. MANAGEMENT PLAN

The management plan should summarize the management approach and the facilities and equipment required. It should be limited to 5 pages of text, or less. Additional guidelines applicable to non-U.S. proposers are contained herein:

1. MANAGEMENT

- a. The management plan sets forth the investigator's approach for managing the work, the recognition of essential management functions, and the overall integration of these functions.
- b. The management plan gives insight into the organization proposed for the work, including the internal operations and lines of authority with delegations, together with internal interfaces and relationships with the NASA. Likewise, the management plan usually reflects various schedules necessary for the logical and timely pursuit of the work accompanied by a description of the investigator's work plan and the responsibilities of scientific collaborators (if any).
- c. The planned participation by small/disadvantaged business in any subcontracting for investigative support functions should be indicated.

2. FACILITIES AND EQUIPMENT

All major facilities and equipment essential to the proposed investigation should be indicated, including those of the investigator's proposed subcontractors and those of NASA and other U.S. Government agencies. Existing equipment should be explicitly differentiated from facilities that will be developed to implement the investigation. Procurement schedules and lead times for the acquisition and installation of new equipment and facilities should also be indicated.

3. ADDITIONAL GUIDELINES APPLICABLE TO NON-U.S. PROPOSERS ONLY

The following guidelines are established for foreign responses to NASA's Announcements of Opportunity. Unless otherwise indicated in a specific announcement, these guidelines indicate the appropriate measures to be taken by foreign proposers, prospective foreign sponsoring agencies, and NASA, leading to the selection of a proposal and execution of appropriate arrangements. They include the following:

- a. Where a "Letter of Intent" to propose is requested, prospective foreign proposers should write directly to the NASA official designated in the Announcement of Opportunity, and send an additional copy of this letter to the International Affairs Division (Code LID-18), National Aeronautics and Space Administration, Washington, D.C. 20546, U.S.A.
- b. Proposals will be submitted in accordance with the NASA "Guidelines for Proposal Preparation." Proposals should be typewritten and in English.
- c. Individuals planning to submit a proposal should arrange with an appropriate foreign government agency for a review and endorsement of the proposed activity. Such endorsement by a foreign organization indicates:
 - (1) The proposal merits careful consideration by NASA.

(2) If the proposal is selected, sufficient funds will be available to undertake the activity envisioned.

d. Proposals (along with the requested number of copies) and letters of endorsement from the foreign government agency should be forwarded to NASA in time to arrive before the deadline established for each Announcement of Opportunity. These documents should be sent to:

National Aeronautics and Space Administration
International Affairs Division
Code LID-18 (AO No. OSSA-4-83)
Washington, D.C. 20546
U.S.A.

e. All proposals should be received before the established closing date; those received after the closing date will be treated in accordance with NASA's provisions for late proposals. Sponsoring foreign governmental agencies may, in exceptional situations, forward a proposal directly to the above address if review and endorsement is not possible before the announced closing date. In such cases, NASA should be advised when a decision on endorsement can be expected.

f. Shortly after the deadline for each Announcement of Opportunity, NASA's International Affairs Division will advise the appropriate sponsoring agency which proposals have been received and when the selection process should be completed. A copy of this acknowledgement will be provided to each proposer.

g. Successful and unsuccessful proposers will be contacted directly by the NASA Program Office coordinating the Announcement of Opportunity. Copies of these letters will be sent to the sponsoring governmental agency.

h. NASA's International Affairs Division will then begin to make the necessary arrangements to provide for the selectee's participation in the appropriate NASA program. Depending on the nature and extent of the proposed cooperation, these arrangements may entail:

(1) A letter of notification by NASA.

(2) An exchange of letters between NASA and the sponsoring foreign governmental agency.

(3) An agreement or Memorandum of Understanding between NASA and the sponsoring foreign governmental agency.

B. COST PLAN (U.S. INVESTIGATORS ONLY)

The cost plan should summarize the total investigation cost by major categories of cost, by function, and by Fiscal Year.



END

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